

CLAIMS

WHAT IS CLAIMED IS:

1. A displacement type expansion machine which is equipped with an expansion mechanism (60, 130) in which power is generated as a result of expansion of high-pressure fluid supplied to an expansion chamber (62, 137),

wherein:

a communicating passage (72, 80, 140), for establishing fluid communication from a fluid outflow side of said expansion chamber (62, 137) to an expansion-process intermediate position of said expansion chamber (62, 137), is provided, and

10 said communicating passage (72, 80, 140) is provided with an opening/closing mechanism (73, 77, 87, 145).

2. The displacement type expansion machine of claim 1, wherein said opening/closing mechanism (73, 87, 145) is formed by a check valve which permits fluid flow 15 in a direction from the fluid outflow side of said expansion chamber (62, 137) towards the expansion-process intermediate position of said expansion chamber (62, 137), but prevents fluid flow in a direction from the expansion-process intermediate position of said expansion chamber (62, 137) toward the fluid outflow side of said expansion chamber (62, 137).

3. The displacement type expansion machine of claim 2, wherein said check valve 20 (73, 87, 145) is formed by a spring return type check valve which is configured so as to enter the open state whenever fluid pressure at the expansion-process intermediate position of said expansion chamber (62, 137) falls below fluid pressure at the fluid outflow side of said expansion chamber (62, 137) by more than a predetermined amount.

4. The displacement type expansion machine of claim 1, wherein said opening/closing mechanism (77) is formed by an electromagnetic valve which is configured 25 so as to enter the open state whenever fluid pressure at the expansion-process intermediate

position of said expansion chamber (62) falls below fluid pressure at the fluid outflow side of said expansion chamber (62) by more than a predetermined amount.

5. The displacement type expansion machine of any one of claims 1-4, wherein said communicating passage (80, 140) is formed so as to extend through the inside of a
5 constructional member (61, 132) which constitutes said expansion mechanism (60, 130).

6. The displacement type expansion machine of any one of claims 1-4, wherein said expansion mechanism (60, 130) is configured so as to perform an expansion stroke of a vapor compression refrigerating cycle.

7. The displacement type expansion machine of any one of claims 1-4, wherein
10 said expansion mechanism (60, 130) is configured so as to perform an expansion stroke of a vapor compression refrigerating cycle in which a high-level pressure becomes a supercritical pressure.

8. The displacement type expansion machine of any one of claims 1-4,
wherein:

15 said expansion mechanism (60, 130) is a rotary type expansion mechanism, and rotational power is recovered by expansion of fluid.

9. A fluid machine comprising a casing (31, 101) which houses therein a displacement type expansion machine (60, 130), an electric motor (40, 110), and a compressor (50, 120) which compresses fluid by being activated by said displacement type expansion
20 machine (60, 130) and said electric motor (40, 110),

wherein said displacement type expansion machine (60, 130) is formed by a displacement type expansion machine as set forth in claim 8.

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